Abstract: A selectively orientable static bearing assembly is provided for allowing objects attached thereto to be pivoted and rotated to a predetermined orientation and then released. When released, the object is held by the bearing assembly in the new orientation without the need for locking screws or other separate locking mechanisms.

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report: 10 March 2016
INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 15/40779

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) ... Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300
Form PCT/ISA/210 (second sheet) (January 2015)

B. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 5,911,515 A (Allen et al.) 15 June 1999 (15.06.1999), entire document, especially Fig. 2, 3, 4; col 4, ln 61-63; col 4, ln 63-67; col 5, ln 2-4; col 5, ln 51-54; col 5, ln 57-61; col 5, ln 44-47; col 6, ln 7-9; col 5, ln 29-38; col 6, ln 43-49;</td>
<td>1-6, 11-14</td>
</tr>
<tr>
<td>A</td>
<td>US 2012/0163746 A (Guthrie) 28 June 2012 (28.06.2012), entire document, especially Fig. 1, 2A, 3; para[0029]; para[0030]; para[0031]; para[0032];</td>
<td>1-6, 11-17</td>
</tr>
<tr>
<td>Y</td>
<td>US 2001/0013365 A1 (Robinson) 16 August 2001 (16.08.2001), entire document, especially Fig. 1, 2; para[0024]; para[0027];</td>
<td>6, 15-17</td>
</tr>
<tr>
<td>A</td>
<td>WO 2003/081750 A1 (Valeo Equipements Electriques Moteur) 02 October 2003 (02.10.2003), entire document, especially Fig. 1, 6, 8; pg 9, ln 18-26;</td>
<td>15-17</td>
</tr>
<tr>
<td>A</td>
<td>US 5,492,428 A (Hellon et al.) 20 February 1996 (20.02.1996), entire document, especially Fig. 1; col 3, ln 33-35; col 3, ln 35-37; col 3, ln 40-45;</td>
<td>7-10</td>
</tr>
<tr>
<td>A</td>
<td>US 2,175,298 A (Leighton) 10 October 1939 (10.10.1939), entire document, especially Fig. 1; pg 1, col 2, ln 53-55; pg 1, col 2, ln 36-42;</td>
<td>7</td>
</tr>
<tr>
<td>A</td>
<td>US 3,252,742 A (Swanstrom) 24 May 1966 (24.05.1966), entire document</td>
<td>1-17</td>
</tr>
<tr>
<td>A</td>
<td>US 4,094,559 A (Sliusarski) 13 June 1978 (13.06.1978), entire document</td>
<td>1-17</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"K" document member of the same patent family

Date of the actual completion of the international search
03 November 2015 (03.1.1955)

Date of mailing of the international search report
12 JAN 2016

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Authorized officer: Lee W. Young
PCT Helpdesk: 571-272-4300
PCT DSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)
**INTERNATIONAL SEARCH REPORT**

**Box No. II** Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. **Claims Nos.:**
   - because they relate to subject matter not required to be searched by this Authority, namely:

2. **Claims Nos.:**
   - because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. **Claims Nos.:**
   - because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III** Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.
- Group I: Claims 1-17 directed to a static bearing assembly.
- Group II: Claim 18-21 directed to a method for mounting and orienting an object.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

— Continued in supplemental box —

1. **Claims Nos.:**
   - because they relate to subject matter not required to be searched by this Authority, namely:

2. **Claims Nos.:**
   - because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. **Claims Nos.:**
   - because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

4. **Claims Nos.:**
   - because they relate to subject matter not required to be searched by this Authority, namely:

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**Remark on Protest**

- **The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.**
- **The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.**
- **No protest accompanied the payment of additional search fees.**

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Form PCT/ISA/210 (continuation of first sheet (2)) (January 2015)
SPECIAL TECHNICAL FEATURES

The invention of Group II includes the special technical features of a method of mounting and orienting an object comprising: obtaining a static bearing assembly having: a generally annular retainer having a central axis, an outer wall, and a generally conical inside wall that defines a bearing seat; a pivot bearing mounted within the retainer; the pivot bearing including a mounting structure and having a generally spheroidal outside wall that contacts the bearing seat and, an elastomeric compression ring mounted within the retainer, the elastomeric compression ring being on a first end of the retainer, extending inwardly toward the central axis, and bearing against the generally spheroidal outside wall of the pivot bearing; mounting the object to the mounting structure; orienting the object to a desired orientation by an application of a positioning force; and after the application of the positioning force, passively maintaining the orientation of the object by the elastomeric compression ring bearing against the outside wall of the pivot bearing, not required by the claims of Group I.

COMMON TECHNICAL FEATURES

The inventions of Groups I-II share the technical features of a static bearing assembly comprising: a generally annular retainer having a central axis, an outer wall, and a generally conical inside wall that defines a bearing seat; a pivot bearing mounted within the retainer, and an elastomeric compression ring mounted within the retainer; wherein the pivot bearing has a generally spheroidal outside wall that contacts the bearing seat and includes a mounting structure; and the elastomeric compression ring is on a first end of the retainer, extends inwardly toward the central axis, and bears against the generally spheroidal outside wall of the pivot bearing. Specifically, Groups I and II are related as an apparatus (Group I) and methods for using the apparatus (Group II). The apparatus is known in prior art as shown in US 5,911,515 A to Allen et al. (hereinafter 'Allen') in view of US 2012/0163746 A1 (Guthrie). Therefore, Groups I and II lack unity since the shared technical features do not represent a contribution over Allen in view of Guthrie:

Allen discloses a static bearing assembly (31, Fig. 2; col 4, ln 61-63, 'a self clinching rolling bearing assemble[Note: see below] comprising: a generally annular retainer (32, Fig. 2, 4; col 4, ln 63-67, 'a metal retainer 32') having a central axis (Fig. 2 - see central axis aligned with the central vertical line), an outer wall (33, Fig. 2; col 5, ln 2-4, 'an outer wall 33'), and a generally conical inside wall (34, Fig. 2 - see generally conical inside wall 33; col 5, ln 2-4, 'an inner wall 34') that defines a bearing seat (44, Fig. 2; col 5, ln 51-54, 'the tapered seat 44'); a pivot bearing (41, Fig. 2 - see pivot bearing 41) mounted within the retainer (Fig.: col 5, ln 51-54, 'the bearing sleeve 41 is free to rock back and forth on the tapered sleeve 41 through a predetermined angle A'); and an [elastomeric compression] ring (52, Fig. 2 - see ring 52; col 5, ln 57-61, 'an annular washer 52') mounted within the retainer (Fig. 2 - see how the ring 53 is mounted within the retainer 32); wherein the pivot bearing (41, Fig. 2) has a generally spheroidal outside wall (42, Fig. 2 - see spheroidal outside wall 42 of pivot bearing 41; col 5, ln 44-47, 'the outer surface 42 of the bearing sleeve 41 is formed with a substantially spherical or at least partially spherical bulge that projects outwardly') that contacts the bearing seat (Fig. 2 - see how the outer wall 42 contacts the bearing seat 44) and includes a mounting structure (49, Fig. 2 - see inner mounting structure 49; col 6, ln 7-9, 'a roller retainer 49'); and the [elastomeric compression] ring (52, Fig. 2) is on a first end (Fig. 2 - see top end of retainer 32) of the retainer (Fig. 2 - see how the ring 52 is positioned on the first/top end of the Retainer 32), extends inwardly toward the central axis (Fig. 2 - see how the ring 52 extends inwardly toward the central axis), and bears against the generally spheroidal outside wall of the pivot bearing (Fig. 2 - see how the ring 52 bears against the outside wall 42 of the pivot bearing 41; col 5, ln 57-61, 'an annular washer 52, which can be made of a suitable plastic material, surrounds the upper end portion of the bearing sleeve 41'), but Allen does not specifically teach an elastomeric compression ring mounted within the retainer. However, Guthrie does teach a bearing assembly (13, Fig. 2A; para[0030], 'a ball bearing 13') comprising: an elastomeric compression ring (10, Fig. 2A; para[0029], 'an annular elastomeric compression ring 10') mounted within the retainer (12, Fig. 2A - see how the elastomeric compression ring 10 is mounted within the retainer 12; para[0029], 'an annular elastomeric compression ring 10 is disposed in an arcuate groove or slot 8 (Fig. 2A) and extends around the inner wall of the retainer at one end'). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the ring of Allen's bearing assembly by employing the elastomeric compression ring as taught by Guthrie, in order to have allowed for a more controllable and predictable compression ring, capable of providing a predetermined internal friction force that permits pivotal and rotational force only when sufficient force is provided.

As the common technical features were known in the art at the time of the invention, these cannot be considered special technical feature that would otherwise unite the groups. Therefore, Groups I-II lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.

"Note: Regarding claim 1, the claim language is confusing, specifically the term "static bearing." The Applicant's specification defines the term "static bearing" as: "a "static" bearing is a bearing that does not necessarily accommodate rotating motion of a shaft as in the above patents, but rather supports and positions objects attached to the bearings." Accordingly, Allen's self-clinching bearing assembly is considered a static bearing assembly due to the bearings ability to support and position shafts."